

# Multicast Failure

*Using PAGENAME in node0509*

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Using multicast node numbers (0x09F<sub>x</sub>) often fails to work in node0509 when using the NAME page application that supports generic name lookups. It always works with 0x09F9, but it seldom works with other 0x09F<sub>x</sub> values. One thing that distinguishes 0x09F9 is that it is in the multicast receive-sensitive table at TRING+0x0240, which means that it occupies an IPARP entry continuously due to the minute-by-minute IGMP queries by the multicast router. If another entry is placed into that table, its multicast node number also seems to work.

Examining the code that initiates a name lookup query in the Click function of PAGENAME, GetPNode is called to get the pseudo node number corresponding to the target multicast node# and the Classic port#. Function GetPNode is a routine that is called by LOOPREQM, LOOPDBDL, and PAGENAME. Now as a point of confusion, another routine called GetPNode exists within the system code, but its purpose is different; given an IP address, it returns a pseudo node# using the IPNOD network lookup tables. It would be wise to change the name of the one called by applications in order to remove the confusion factor.

Application LOOPREQM only uses GetPNode when performing its keep-alive target alarm node function, which we neither use nor need. Application LOOPDBDL uses GetPNode to get a pseudo node# for communicating with the Acnet DABBEL-triggered download. Only PAGENAME needs it to work with multicast node numbers (ignoring the LOOPREQM alarm node option).

Upon investigation, the problem is in GetPNode. When it calls PsNIPARP to get a pseudo node#, it always passes a NULL hardware address, which is ok for any IP address already in the IPARP table. But it is not ok for a multicast IP address that is not already in the IPARP table. In the latter case, the result is that a physical address of all zeros is left in the newly-created IPARP entry, and there will be no ARP reply to replace it. This is why the failure results in a datagram targeted to all the zeros physical address.

The solution is to modify GetPNode, changing its name to GetPsNod in order to avoid the confusion with the system-code-resident function also called GetPNode. The new logic, for the multicast case of 0x09F0–0x09FF, passes the standard physical address of 0x01005E00xxxxxx, where the low 23 bits matches the low 23 bits of the IP multicast address, to PsNIPARP, insuring that a new IPARP entry includes the correct ethernet physical multicast address. For the non-multicast case, the logic is unchanged. One advantage of this solution is that it means the systemcode does not have to be updated.

The above solution was implemented, and the NAME page application works ok now. The PowerPC version of PAGENAME did not exhibit the same problem.